

## Energy News Overview

The international energy news of note this past month was the joint announcement on May 20, by Russia and China, of a 30-year deal to deliver Russian natural gas to China: see third article on page 5. The agreement had been years in development and has both geopolitical and energy market implications. With a modest but secure new source of natural gas, China may have a reduced interest in future LNG imports sourced from proposed export terminals on the west coast of North America, which may impact the viability of these projects. See first article on page 5 for a well written account of China's global search for secure supplies of energy. Also note the next article on page 5 describing the energy windfall for Putin's Russia following the recent annexation of Crimea.

China's rapid industrialization and voracious energy appetite (see energy forecast on page 6) has motivated the nation to spend over \$200 billion during the past decade in a large number of nations. Countries such as South Sudan, Ecuador, Venezuela and even the U.S. have received large financial investments and/or technical support for equity stakes in numerous energy projects. Last month's energy newsletter noted several proposed energy related projects in Washington state (methanol, coal and LPG projects) which would primarily serve China. To get a sense of how rapidly the world is changing consider these factoids: China passed the U.S. in Greenhouse Gas (GHG) emissions in 2006, in total energy consumption in 2010, and is expected to supplant the U.S. as the world's largest oil importer in 2014. China may account for 50 percent of the coal global consumption this year as well. Chinese development and consequent energy imports is expected to be the largest factor in driving global energy consumption, energy prices, and GHG emissions for the next two decades.

While China is becoming the big Kahuna in global energy markets, other nations are shaping international energy trade as well. The European Union is attempting to add biomass electricity generation as a resource to help meet future GHG emission targets. This has created strong demand for U.S. sourced wood pellets as illustrated by the two top figures on page 8. The U.K. has been particularly active in the wood pellet market. The U.S. renewable fuel standard, and the California low carbon fuel std. have increased demand for biomass based diesel. U.S. demand has outstripped domestic supply and imports of biomass diesel have surged over the past year: refer to bottom chart on page 8.

At the national level we will have to wait a few more days (until June 2nd) for the announcement on the proposed draft EPA rules for existing electric power plants. Rumors indicate that the proposed rule will be flexible and offer multiple compliance pathways. The proposed rule will be reviewed in next month's energy newsletter.

Last month we mentioned the Governor's Executive Order (14-04) addressing carbon pollution reduction and clean energy development. A brief overview of the E.O. is presented on page 2 and includes links.

In climate change news two reports, including one authored by U.W. researchers, were published in May describing the melting of the West Antarctic ice sheet: see article page 6. The news isn't good as the reports indicate that the warming of the earth's atmosphere and oceans means that the melting of large sections of the West Antarctic ice sheet is virtually inevitable. The melting will take centuries but could add 10 to 15 feet to sea level, an amount that would inundate coastlines and dozens of major cities.

In April the EPA released the 1990-2012 U.S. GHG Inventory report: see page 9 for a brief summary and link.

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# What's Happening in the Energy Office

## Governor Inslee's Executive Order 14-04

On April 29<sup>th</sup> Governor Jay Inslee signed [Executive Order 14-04](#) which supersedes [EO 07-02](#) and [09-05](#). Executive Order 14-04 titled Washington Carbon Pollution Reduction and Clean Energy Action seeks to reduce Washington's energy consumption and GHG emissions while simultaneously improving job growth and economic competitiveness.

1. [Carbon Emission Reduction Task Force](#) – The Governor-appointed [taskforce members](#) will focus on developing a market mechanism that internalizes the social costs of greenhouse gases while allowing the market to pick the best suite of technological solutions. The taskforce meetings will be open to the public
2. Coal-Fired Electricity – While nearly 70% of Washington's electricity is produced from low-carbon emitting hydro-electric dams, coal-fired electricity creates 60% of the GHG emissions associated with electricity. The Legislative Affairs and Policy Office (LAPO) is instructed to negotiate agreements to reduce and eventually eliminate imported electricity from coal fired power plants often called "Coal by Wire".
3. Clean Transportation - The Transportation sector is the largest single contributor to Washington State's GHG emissions; contributing 44% of our annual emissions. The executive order calls on The Department of Transportation, Commerce, Ecology, Office of Financial Management and others to develop plans to increase electric vehicle use, increase use of low carbon fuels, improve land-use patterns and multimodal transportation systems, etc.
4. Clean Technology – The Executive order instructs the Department of Commerce in cooperation with Washington State University (WSU) and other stakeholders to develop a new state program to encourage Research, Development, and Deployment of new renewable energy and energy efficiency technologies. This program proposal must include specific ideas for dedicated and sustained program funding.
5. Energy Efficiency – The Executive Order instructs the Department of Commerce, WSU Energy Program, and the State Building Code Council to develop a statewide program that significantly improves the energy performance of both public and private buildings. The new program focused on cost effective building improvements and new designs
6. State Government Operations – The Department of Enterprise Services in collaboration with the Department of Commerce, Office of Financial Management and WSU Energy Program will develop programs and procurement instructions which lead agencies towards acquiring the lowest life cycle cost: vehicles, buildings, and energy efficient retrofits for State assets. Additional efforts will be made to increase efficiency and reduce the emissions associated with day to day state government operations.
7. Carbon Pollution Limits - The Department of Ecology, as required by [RCW 70.235.040](#), will review the State's enacted greenhouse gas emissions limits and recommend any updates to the limits by July 15, 2014
8. Improve Intergovernmental Relations and Public Outreach
9. State Agency Coordination – A new subcabinet The Energy, Transportation and Climate subcabinet (ETC) is created to coordinate and implement state agency work under this executive order.
10. General – Agencies will report to the Governor as work is completed as well as provide an annual progress report to be submitted by November of each year; starting November 2014.

## Energy Independence Act Rulemaking—2nd Workshop

The Department of Commerce will hold a workshop on **Tuesday, June 10, 2014**, to discuss issues relating to potential changes to its rules regarding use of incremental hydro under the Energy Independence Act. The workshop will start at 9 am and will be held at Commerce's offices in Olympia. A conference bridge will be available for those unable to attend in person.

The workshop will also include discussion of issues related to distributed generation. These were on the agenda for the last workshop on May 14 but were not discussed due to lack of time.

# Electricity, Petroleum & Natural Gas Prices

## Energy Price Overview

During May the spot price for West Texas Intermediate increased about three dollars trading at just over \$104 per barrel, which is about nine dollars more than during May of 2013. Brent crude oil also increased about three dollars during May to nearly \$110 per barrel. Four factors have contributed to the recent and year long increase in WTI price: an increase in oil global production being taken off-line due to conflict or technical problems, a small increase in U.S. demand for fuels, lower U.S. crude inventories and increased pipeline capacity moving WTI to coastal refineries where prices are higher and set by international crude oils, such as Brent. The improved pipeline access for WTI has caused the price spread between Brent and WTI crude oils to decrease from eight to about just over five dollars per barrel.

While WTI crude oil price is about ten percent higher, retail prices for gasoline and diesel at the national and state level are about the same as a year ago. During the last full week in May U.S. gasoline and diesel prices averaged \$3.67 and \$3.93 per gallon respectively: each down about five cents per gallon from April. For the same period Washington state gasoline and diesel prices averaged \$3.90 and \$4.04 per gallon, a two cent and one cent increase from the last week in April

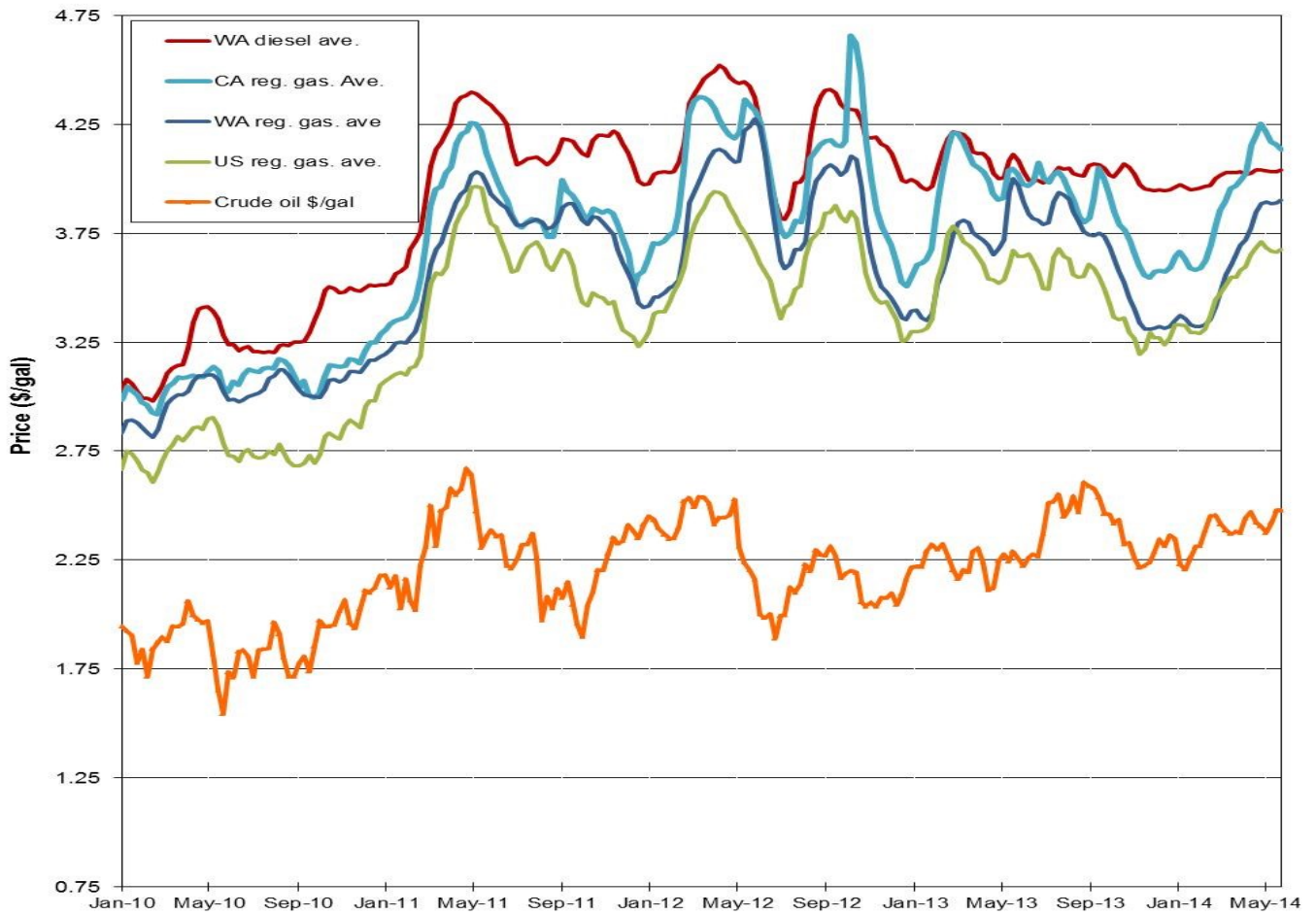
The price for month ahead NYMEX natural gas decreased slightly to \$4.50 per MMBtu: an 11 cent decline from the previous month. Locally, natural gas spot average price at Kingsgate was \$4.27 per MMBtu, down 25 cents from the price reported for last month. U.S. natural gas storage increased a substantial 114 billion cubic feet to 1380 Bcf for the week ending May 23. The national gas storage level is 40 percent below its 5-year average, and in the West we are 31 percent below our 5 year average. The gas storage refill season typically begins in April, and runs through October. The current deep natural gas storage deficit, combined with nearly stagnant US production and several coal plant retirements, will likely support higher natural gas prices for the rest of 2014.

Electricity prices at the Mid C averaged \$35.2 per megawatt-hr during May, up about four dollars from the previous month. Hydropower generation has been plentiful during April and May and exports to California are above normal.

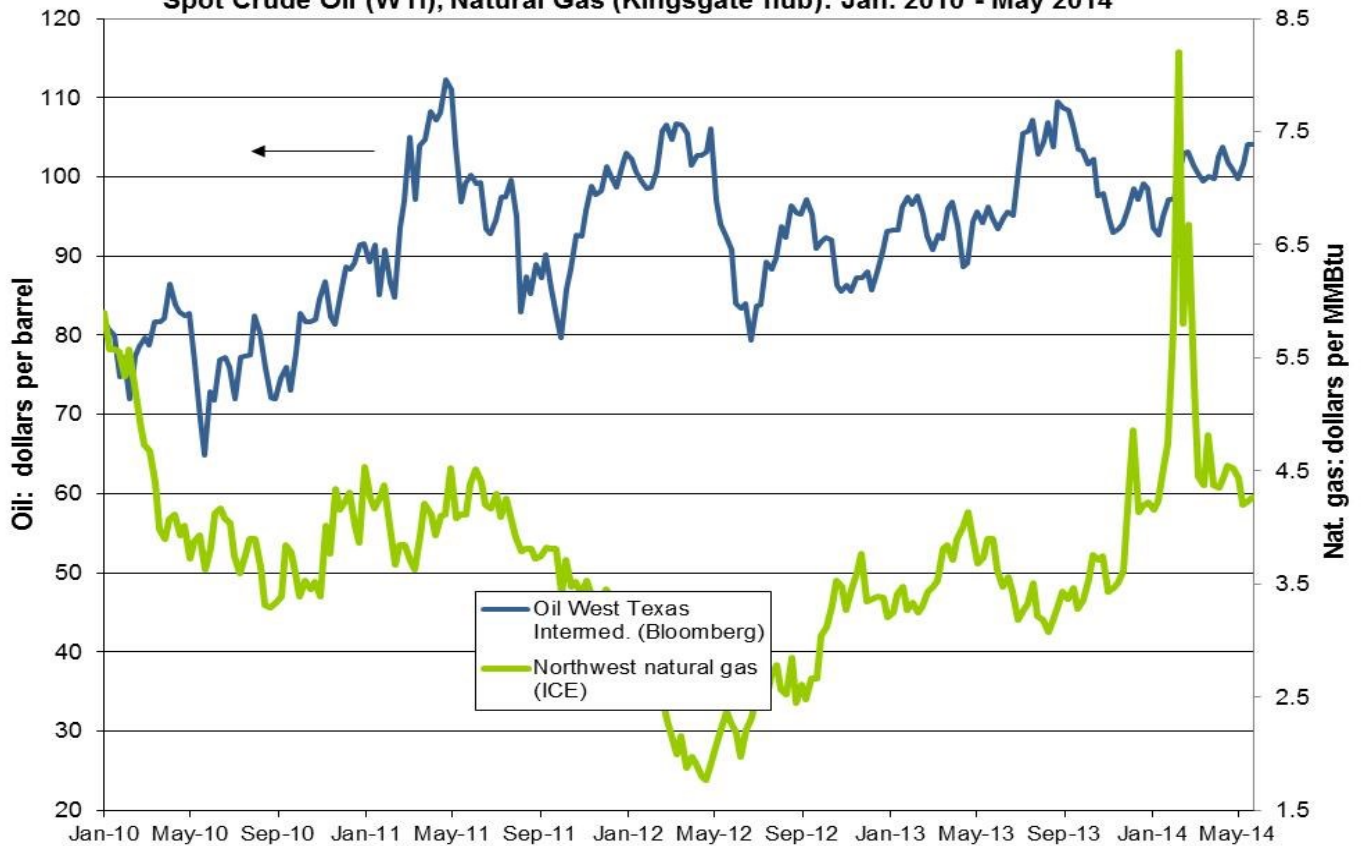
<b>Energy Price Summary</b>	<b>Current</b>	<b>Month Ago</b>	<b>Year Ago</b>
Monthly Range at Mid-C (Peak: \$ per MWh)	17.2-61	16.5-43	23-43
Average Mid C price (Peak hours \$ MWh)	35.2	31.4	33.5
Electricity WA Retail: Mar. (cents/kWh)	7.38	7.40	7.08
Natural gas Kingsgate spot price (next day: \$ per million BTU)	4.27	4.52	3.90
Natural gas Sumas futures price (next month \$ per million BTU)	4.16	4.54	3.91
Natural gas Sumas monthly average: Mar. (\$ per million BTU)	4.65	5.95	3.53
Natural gas H.H. futures (NYMEX next month: \$ per million BTU)	4.50	4.61	4.18
E85 (national average: \$ per gallon gasoline)	3.98	4.17	4.14
Ethanol (CBT next month contract: \$ per gallon)	2.38	2.30	2.55
Corn (CBT next month contract: \$ per bushel)	4.69	5.09	6.66
Petroleum, West Texas Intermediate futures (\$ per barrel)	104.1	101.1	94.9
Seattle gasoline price (\$ per gallon)	4.01	3.95	4.01
Gasoline futures (NYMEX next month: \$ per gallon)	2.95	3.01	2.79
State diesel price (\$ per gallon)	4.04	4.04	4.09
Heating oil futures (NYMEX next month: \$ per gallon)	2.94	2.96	2.86
U.S. residential propane price report (reported Oct.-Mar.)	NA	NA	NA
<b>Clean Cities: Alternative Fuel Price Report, Jan. 2013</b>	<b>US Avg current</b>	<b>West Coast current qtr</b>	<b>West Coast last qtr avg</b>
Ethanol E85 (\$ per gas gallon equiv. )	4.29	4.55	4.61
Biodiesel B20 (\$ per diesel gallon equiv.)	4.05	4.15	4.35
Biodiesel B99-100 (\$ per diesel gallon equiv.)	4.71	4.99	4.84
Compressed Natural Gas (\$ per gas gallon equiv. )	2.09	2.33	2.31
Propane (\$ per gas gallon equiv.)	4.31	4.50	4.22

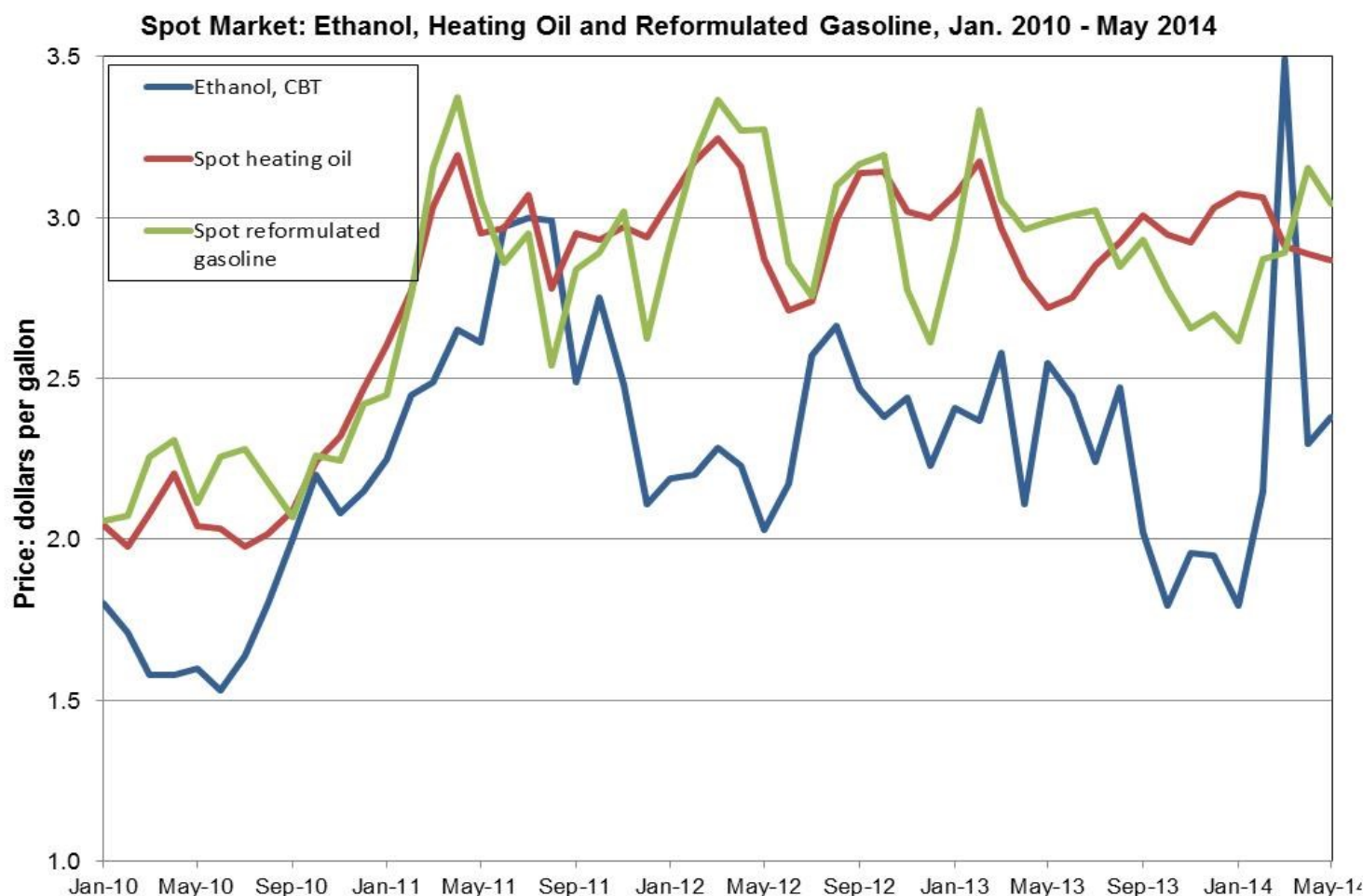


**Retail Gasoline and Diesel Prices: Jan. 2010 - May 2014**



**Spot Crude Oil (WTI), Natural Gas (Kingsgate hub): Jan. 2010 - May 2014**





## Energy Headlines - If you only have time to read a few articles—read these.

China's global search for energy. New York Times, May 22.

<http://www.nytimes.com/2014/05/22/business/international/chinas-global-search-for-energy.html?action=click&module>

In taking Crimea, Putin gains a sea of fuel reserves. New York Times, May 17.

[http://www.nytimes.com/2014/05/18/world/europe/in-taking-crimea-putin-gains-a-sea-of-fuel-reserves.html?ref=energy-environment&\\_r=0](http://www.nytimes.com/2014/05/18/world/europe/in-taking-crimea-putin-gains-a-sea-of-fuel-reserves.html?ref=energy-environment&_r=0)

China and Russia reach 30-year gas deal. New York Times, May 21.

<http://www.nytimes.com/2014/05/22/world/asia/china-russia-gas-deal.html>

On climate change, Republicans can't deny reality forever. Washington Post, May 6.

<http://www.washingtonpost.com/blogs/plum-line/wp/2014/05/06/on-climate-change-republicans-cant-deny-reality-forever/>

One trillion dollars in oil projects 'will not see return' if governments act on climate. The Guardian, May 8.

<http://www.theguardian.com/environment/2014/may/08/oil-capital-climate-change>

BMW to expand US plant in push for lighter more fuel-efficient cars. New York Times, May 9.

<http://www.nytimes.com/2014/05/10/business/bmw-to-expand-us-plant-in-push-for-lighter-and-more-fuel-efficient-cars.html>

Climate Change Deemed Growing Security Threat by Military Researchers. New York Times.

<http://www.nytimes.com/2014/05/22/business/international/chinas-global-search-for-energy.html?action=click&module>

## Energy Headlines—continued

### Global

France defers G.E. plan to buy energy business. New York Times, Apr. 27.

<http://dealbook.nytimes.com/2014/04/27/france-warns-alstom-on-possible-g-e-alliance/>

Seeing future in fuel cells, Toyota ends Tesla deal. New York Times, May 21. <http://www.nytimes.com/2014/05/13/business/energy-environment/seeing-future-in-fuel-cells-toyota-ends-tesla-deal.html>

University of Washington Researchers Say Antarctic Ice Sheet Collapsing, Rise of Oceans Inevitable. KIRO

<http://mynorthwest.com/11/2520103/UW-researchers-say-Antarctic-ice-sheet-collapsing-rise-of-oceans-inevitable>

### National

Applying the lessons of politics to green power. New York Times, May 26.

<http://www.nytimes.com/2014/05/27/business/energy-environment/applying-the-lessons-of-politics-to-green-power.html?hpw&rref=science>

Congressman Says Washington State Coal Plan Hurts Montana. Associated Press.

<http://www.sacbee.com/2014/05/12/6398879/daines-washington-state-coal-plan.html>

Pipeline, Energy Bill Backers Vow to Keep up Fight. Associated Press.

<http://abcnews.go.com/Politics/wireStory/pipeline-energy-bill-backers-vow-fight-23691463>

Why divestment fails. New York Times, May 9.

<http://www.nytimes.com/2014/05/10/opinion/why-divestment-fails.html>

U.S. Non-hydro renewables out produce hydropower for the first time. North American Windpower, May 27.

[http://www.nawindpower.com/e107\\_plugins/content/content.php?content.13012](http://www.nawindpower.com/e107_plugins/content/content.php?content.13012)

U.S. to store gasoline for crises in the Northeast. New York Times, May 2.

<http://www.nytimes.com/2014/05/02/nyregion/us-to-store-gasoline-for-crises-in-the-northeast.html>

A price tag on carbons as a climate rescue plan. New York Times, May 30.

<http://www.nytimes.com/2014/05/30/science/a-price-tag-on-carbon-as-a-climate-rescue-plan.html?hp>

### Regional

Governor Kitzhaber: Oregon Carbon Tax is ‘Inevitable’. Sustainable Business Oregon.

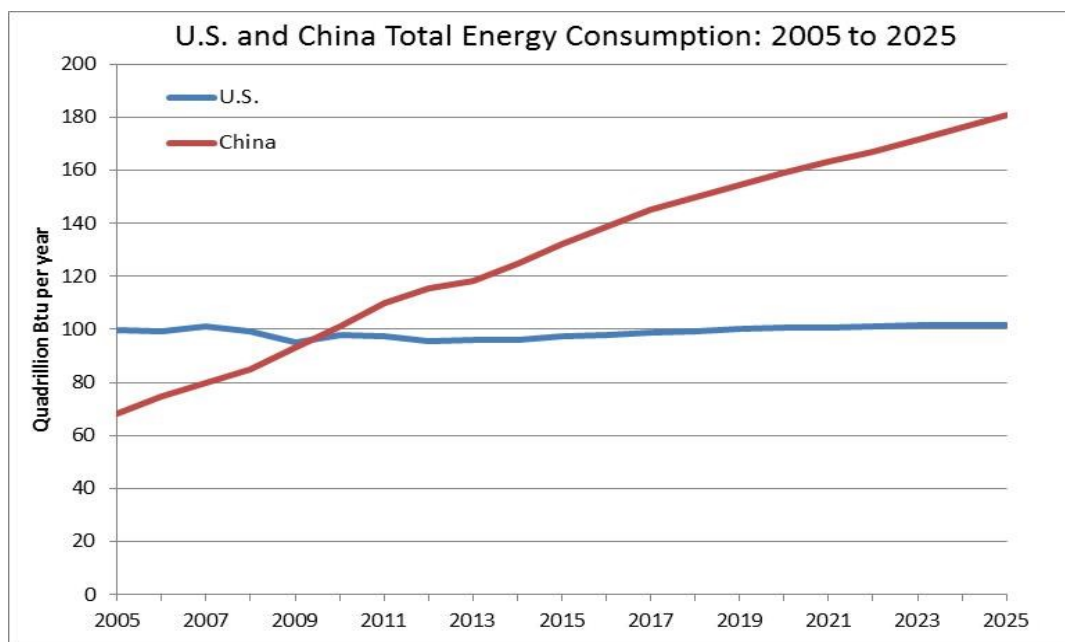
<http://www.sustainablebusinessoregon.com/articles/2014/05/gov-kitzhaber-oregon-carbon-tax-is.html>

Inslee’s Climate Effort Will Face Steep Odds. Crosscut Seattle.

<http://crosscut.com/2014/05/14/climate/120065/inslees-climate-effort-will-face-steep-odds/>

Washington State Governor: Fuel Standard Won’t Push Gas Prices Up \$1 per Gallon. KIRO,

<http://mynorthwest.com/11/2527585/Inslee-Fuel-standard-wont-push-gas-prices-up-1-a-gallon>



## Recent Reports on Energy and Climate Change

Tesoro Savage Petroleum Terminal submission to the Energy Facility Siting Evaluation Council

<http://www.efsec.wa.gov/Tesoro-Savage.shtml>

<http://www.iea.org/publications/freepublications/publication/name,43771,en.html>

Fifth Assessment Report. Intergovernmental Panel on Climate Change (IPCC) 2013-14.

<http://www.ipcc.ch/>

First academic study released in EDF's groundbreaking methane emissions series. Environmental Defense Fund, Sept 2013.

<http://www.edf.org/media/first-academic-study-released-edf%E2%80%99s-groundbreaking-methane-emissions-series>

World Bank: 4 Degrees - Turn Down the Heat. Potsdam Institute for Climate Impact Research and Climate Analytics. June 2013. [http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2013/06/14/000445729\\_20130614145941/Rendered/PDF/784240WP0FullI00D0CONF0to0June19090L.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2013/06/14/000445729_20130614145941/Rendered/PDF/784240WP0FullI00D0CONF0to0June19090L.pdf)

[http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2013/06/14/000445729\\_20130614145941/Rendered/PDF/784240WP0FullI00D0CONF0to0June19090L.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2013/06/14/000445729_20130614145941/Rendered/PDF/784240WP0FullI00D0CONF0to0June19090L.pdf)

Long-term outlook for nuclear power depends on lifetime of plant, EIA, Apr. 2013

<http://www.eia.gov/todayinenergy/detail.cfm?id=10991>

Environmental Protection Agency 2012 Climate Change Indicators Report.

<http://www.epa.gov/climatechange/science/indicators/>

Report on the First Quadrennial Technology Review, US Dept. of Energy

<http://energy.gov/downloads/report-first-quadrennial-technology-review>

Understanding Household Preferences for Alternative- Fuel Vehicle Technologies. Mineta Transportation Institute. <http://www.transweb.sjsu.edu/project/2809.html>

[www.transweb.sjsu.edu/project/2809.html](http://www.transweb.sjsu.edu/project/2809.html)

Redrawing the Energy-Climate Map. International Energy Agency, June 2013.

[http://www.iea.org/media/freepublications/executivesummary/WE02013\\_Climate\\_Excerpt\\_ES\\_WEB.pdf](http://www.iea.org/media/freepublications/executivesummary/WE02013_Climate_Excerpt_ES_WEB.pdf)

Natural Gas Weekly Update: <http://www.eia.gov/naturalgas/weekly/?src=Natural-b1>

Monthly Energy Review, EIA : <http://www.eia.gov/totalenergy/data/monthly/>

Short-term Energy Outlook, EIA : <http://www.eia.gov/forecasts/steo/>

This Week in Petroleum. EIA,: <http://www.eia.gov/oog/info/twip/twip.asp>

## River & Snow Pack Info

- Observed May stream flow at The Dalles: 121% of average.
- Observed May precipitation above The Dalles: 103% of average.
- Forecast runoff at The Dalles, May: 109.6 million acre-feet, 108% of 30-year average
- Forecast snowpack volume: May, 117% of average.
- Federal hydropower generation in Apr. : 10,750 aMW, 2009-2013 average: 9,876 aMW.
- Reservoir content (Libby, Hungry Horse, Grand Coulee, Dworshak): Apr. 37%, 5-year average: 46%.

## Power Exchanged

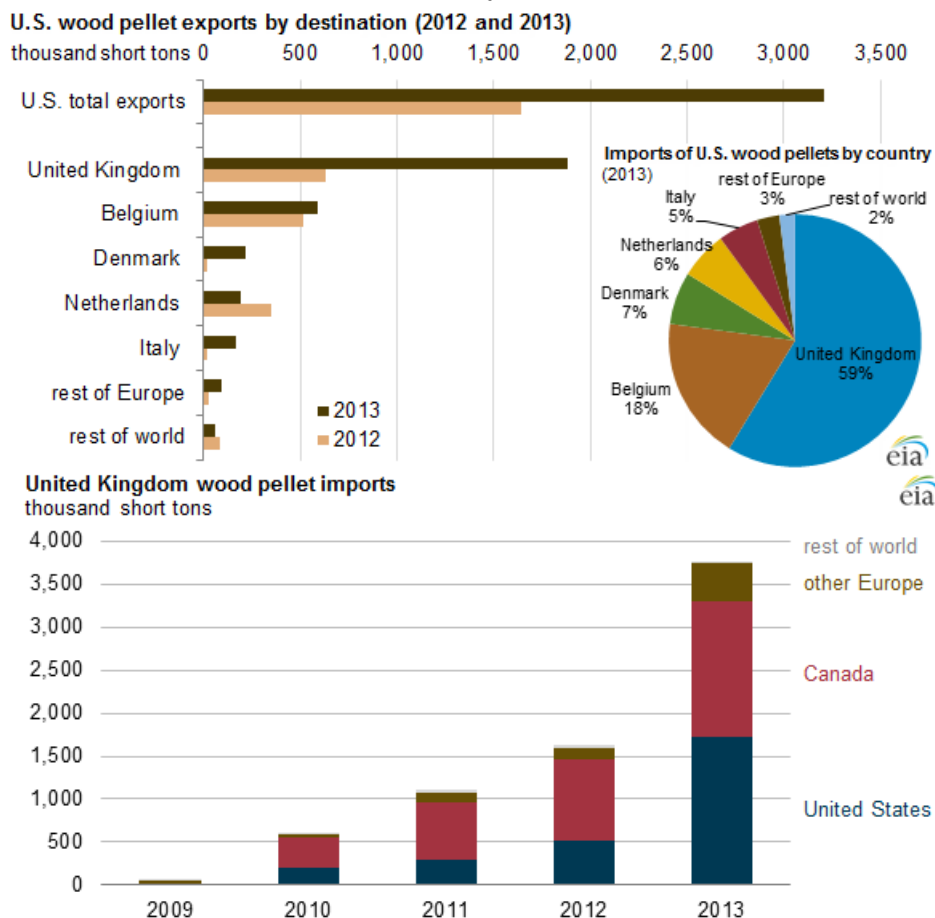
Average flow of power during the last 30 days

- |                            |         |
|----------------------------|---------|
| • California (exported to) | 5956 MW |
| • Canada (export to)       | 348 MW  |
| • Net power exported:      | 6304 MW |

## U.S. wood pellet exports doubled in 2013

<http://www.eia.gov/todayinenergy/detail.cfm?id=16391>

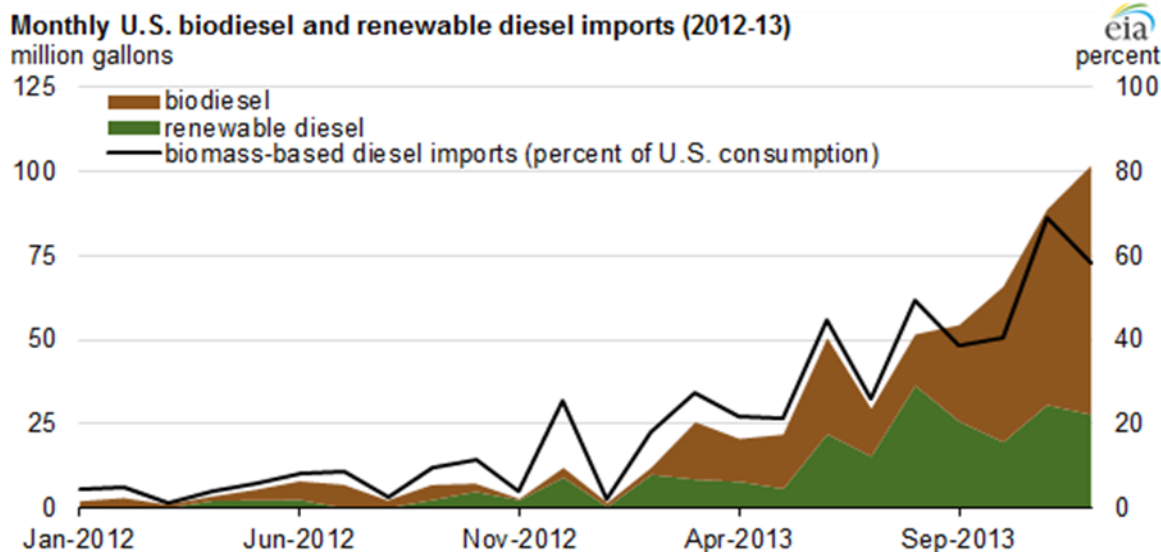
Wood pellet exports from the US almost doubled in 2013, with more than 98% going to Europe. The UK imports were almost zero in 2009 and more than 3.5 million short tons last year, due to conversions of coal-fired plants to biomass.



## U.S. biomass-based diesel imports increase to record levels in 2013

<http://www.eia.gov/todayinenergy/detail.cfm?id=16111>

Last year, total U.S. imports of biomass-based diesel fuels reached 525 million gallons, compared to 61 million gallons in 2012. Two principal factors drove the increase in U.S. biodiesel imports: growth in domestic biodiesel demand to satisfy renewable fuels targets, and increased access to biodiesel from other countries. As a result, the United States switched from being a net exporter of biomass-based diesel in 2012 to a net importer in 2013 by a wide margin.





## Inventory of U.S. Greenhouse Gas Emissions

<http://epa.gov/climatechange/ghgemissions/usinventoryreport.html>

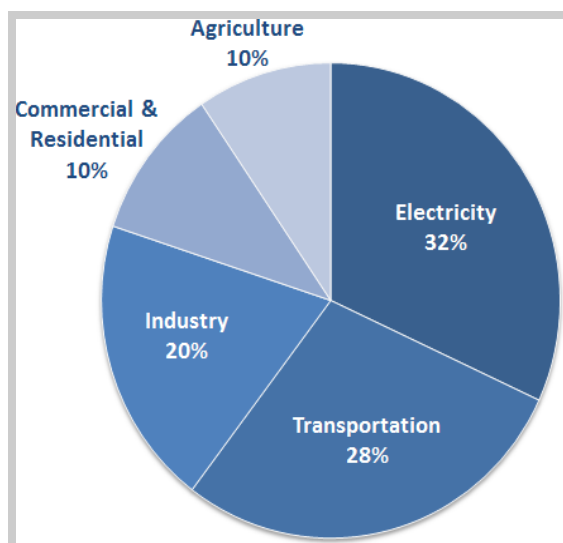
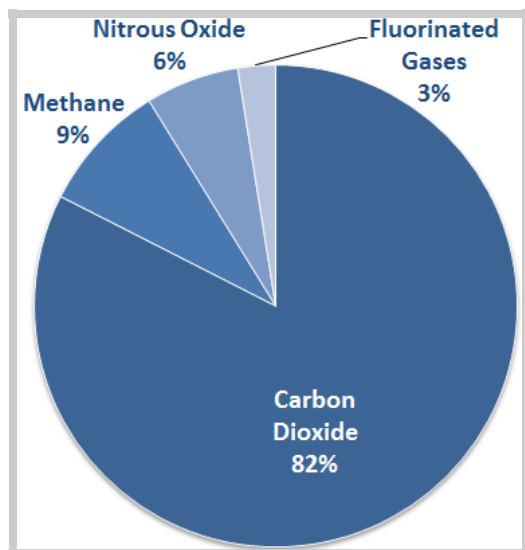
EPA develops an annual report called the Inventory of U.S. Greenhouse Gas Emissions and Sinks (Inventory). This report tracks total annual U.S. emissions and removals by source, economic sector, and greenhouse gas going back to 1990. EPA uses national energy data, data on national agricultural activities, and other national statistics to provide a comprehensive accounting of total greenhouse gas emissions for all man-made sources in the United States.

The Inventory of U.S. Greenhouse Gas Emissions and Sinks tracks the national trend in greenhouse gas emissions and removals back to 1990. The key findings of the 1990-2012 U.S. Inventory include:

- In 2012, U.S. greenhouse gas emissions totaled 6,526 million metric tons CO<sub>2</sub> Eq.
- U.S. emissions decreased by 3.4 percent from 2011 to 2012. Recent trends can be attributed to multiple factors including reduced emissions from electricity generation, improvements in fuel efficiency in vehicles with reductions in miles traveled, and year-to-year changes in the prevailing weather.

Greenhouse gas emissions in 2012 were 10 percent below 2005 levels.

### U.S. Greenhouse Gas Emissions by Gas and by Sector



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